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Part III

Department of Commerce

National Oceanic and Atmospheric Administration

Taking of Marine Mammals Incidental to Commercial Fishing Operations

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 216

Taking of Marine Mammals Incidental to Commercial Fishing Operations

AGENCY: National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final decision, issuance of permit and final rule.

SUMMARY: This final decision establishes regulations to govern the taking of marine mammals incidental to Japanese high seas salmon fishing in the North Pacific Ocean, and in the U.S. Fishery Conservation Zone (FCZ). The regulation provides for a general permit to be issued under the Marine Mammal Protection Act allowing the taking of 5,500 Dall porpoise, 450 northern fur seals, and 25 northern sea lions each year for the period 1981–1983. The National Marine Fisheries Service will monitor the affected fishery to insure that the quotas are not exceeded. A permit allowing such taking is issued.

DATES: The decision and revised § 216.24 becomes effective June 10, 1981. The general permit becomes effective on June 10, 1981.

ADDRESSES: Administrator, National Oceanic and Atmospheric Administration, Department of Commerce, Washington, D.C. 20230.

FOR FURTHER INFORMATION CONTACT: Richard B. Roe, Acting Director, Office of Marine Mammals and Endangered Species, National Marine Fisheries Service, Department of Commerce, Washington, D.C. 20235. Telephone: 202–634–1792; office location: Room 412, Page Building 2, 3300 Whitehaven Street, NW., Washington, D.C.

A Final Environmental Impact Statement (FEIS) has been filed with the Environmental Protection Agency simultaneously with this decision and can be reviewed by contacting Richard B. Roe at the addresses given.

SUPPLEMENTARY INFORMATION: On February 4, 1981 (46 FR 10785) NOAA published a Notice of Receipt of Permit Application, Notice of Formal Hearing, Notice of Formal Hearing Procedures, and a Notice of Proposed Regulation. The proposal and other relevant available information were reviewed in a formal hearing before Administrative Law Judge (ALJ) Frank W. Vanderheyden in Seattle, Washington, on March 5 and 6, 1981, in accordance with 5 U.S.C. 556 and 557 and 16 U.S.C. 1373(d) and the rules published at 46 FR 10785, February 4, 1981. Opening briefs were filed on March 20, 1981, reply briefs on March 31, 1981, oral argument held on April 1, 1981, and exceptions filed on April 29, 1981.

The following parties participated in the hearing: The Federation of Japanese Salmon Fisheries Cooperative Association (FJS); the Marine Mammal Commission (MMC); the Environmental Defense Fund (EDF); and the Assistant Administrator for Fisheries of NOAA. The recommended decision of the ALJ was issued on April 24, 1981.

I am now publishing the final decision and regulation governing the taking of marine mammals incidental to commercial fishing operations, and issuing the related MMPA permit. As provided in 50 CFR 216.24(c)(6)(v), I am waiving the usual fee for certificates of inclusion issued under this permit.

I have determined that the requirements of Executive Order 12291 are inapplicable to this regulation since it is an administrative action governed by the provisions of 5 U.S.C. 556 and 557.

I have also determined according to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, that this action does not impose significant economic impacts on a substantial number of small entities. To the extent that an impact exists, it would be beneficial to the entities involved because it permits fishing operations to continue in the U.S. FCZ.

The permit authorized by this action imposes reporting requirements on foreign nationals. These reports are needed to determine when the quota established in this regulation is reached as well as to obtain important information regarding Dall porpoise and the fishery interaction with this marine mammal. I am submitting the appropriate information under Section 3507(g) of the Paperwork Reduction Act, 44 U.S.C. 3507(g), to obtain an expedited review and approval of these reporting requirements by the Office of Management and Budget before the permit becomes effective on June 10, 1981. Authorization of this collection of information prior to expiration of the 60-day review period is necessary because the regulation and accompanying permit must be effective on June 10, 1981 to allow the Japanese mothership fishery to continue its salmon gill net operations in the U.S. FCZ this season. We were unable to comply with the 60-day review period because of the schedule for the formal rulemaking.

Because of this emergency and because this regulation has been subject to formal rulemaking procedures pursuant to 5 U.S.C. 556 and 557 and 45 FR 10785 in which the applicant and members of the public have fully participated, I for good cause find that a delay of 30 days in effectiveness under 5 U.S.C. 553 is impracticable and contrary to the public interest. This regulation, therefore, becomes effective on June 10, 1981.

(Marine Mammal Protection Act (16 U.S.C. 1361 et seq.))

Dated: May 8, 1981.

James P. Walsh,

Acting Administrator.

PART 216—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

§ 216.24 [Amended]

1. 50 CFR 216.24(d)(5) is amended by adding a new subdivision (vii) reading as follows:

* * * * *

(d) * * *

(5) * * *

(vii) The number of Dall porpoise *(Phocoenoides dalli)* killed or seriously injured by Japanese vessels shall be limited to 5,500 animals per year. Any permit issued under this regulation shall indicate the measures by which the permit holder shall comply with the reporting requirements of paragraph (d)(5)(v) of this section. Any incidental take permit issued under this regulation shall allow retention of marine mammals for scientific research purposes and not require a separate permit under paragraph (d)(5)(iv).

Decision of the Administrator

A. Background

This decision concerns taking by the Japanese commercial salmon fishery of marine mammals, primarily Dall Porpoise *(Phocoenoides dalli)*, incidental to its gill net operations within and outside the United States fishery conservation zone (FCZ) in the North Pacific Ocean and Bering Sea.

In 1952, the United States, Japan, and Canada executed the International Convention for the High Seas Fisheries of the North Pacific Ocean (INPFC). (*1*) Under this agreement, Japan agreed to abstain from fishing for salmon in certain areas of the North Pacific Ocean and in the Bering Sea. In 1978, the INPFC was renegotiated in recognition of the authority of the United States, Japan and the Soviet Union to manage their fishery resources within their respective 200-mile fishing conservation zones. The Protocol amending the INPFC (*2*) permitted the Japanese mothership fishery to fish for salmon inside the U.S. FCZ. The North Pacific Fisheries Act of 1954, (*3*) implementing the INPFC, was

amended in 1978 to reflect the Protocol and exempted Japanese vessels fishing for salmon within the U.S. FCZ from the incidental take permit requirements of the Marine Mammal Protection Act of 1972 (MMPA) until June 9, 1981. The Act also provided that after June 9, 1981, the taking of marine mammals incidental to Japanese fishing operations within the U.S. FCZ would be regulated by the MMPA.

The Protocol called for a program of coordinated scientific research on marine mammals caught while fishing for anadromous fish species. In 1978, the United States and Japan entered into a cooperative research program to assess the status of Dall porpoise and the extent of incidental take, as well as to develop methods to minimize such taking. Reports on the research conducted through 1979 are now available.

1. *MMPA Requirements.* The MMPA is based on a concern that certain species of marine mammals are depleted or are in danger of depletion (*4*) and the belief that those animals should not be allowed to diminish below their optimum sustainable population (OSP). (*5*) The Act establishes a moratorium on the taking of marine mammals in the United States FCZ which the Secretary of Commerce may waive for takings incidental to commercial fishing operations.

The taking of marine mammals must be in accordance with permits issued by the National Oceanic and Atmospheric Administration pursuant to Section 1374 and regulations promulgated in accordance with Section 1373 of the Act. (*6*) A permit may be granted only if the Secretary finds it would not be to the disadvantage of those species or population stocks. (*7*)

This determination must be based on the best scientific evidence available and must be consistent with the purposes and policies of the Act. The determination of disadvantage to a porpoise stock is based on OSP. When a population is below OSP, it is depleted. No takings may be permitted on depleted stocks. If a stock is not depleted, before takings are permitted, the Secretary must publish and make publicly available certain information on the stocks and the impact of taking on the OSP of the affected stocks. (*8*) If takings are allowed, the Act directs that "[i]n any event it shall be the immediate goal that the incidental kill or incidental serious injury of marine mammals permitted in the course of commercial fishing operations be reduced to insignificant levels approaching a zero mortality and serious injury rate." (*9*) The authority of the Secretary of Commerce to administer the Act and to make these determinations has been delegated to the NOAA Administrator. (*10*)

2. *The Permit Application and Proceedings.* On January 19, 1981 the Federation of Japan Salmon Fisheries Cooperative Associations (*11*) (Federation) submitted an application for an incidental take permit, Category 5, "Other Gear" salmon drift gill net. The permit application requests a three (3) year term (1981–1983) and estimates that the maximum number of marine mammals the Japanese salmon fishery expects to take incidentally on a yearly basis in the U.S. FCZ is as follows: Dall porpoise, 5,500; harbor porpoise (*Phocoena phocoena*), 50; Pacific white-sided dolphin (*Lagenorynchus obliquidens*), 25; killer whale (*Orcinus orca*), 25; Steller sea lion (*Eumetopias jubatus*), 25; and northern fur seal (*Callorhinus ursinus*), 450.

On February 4, 1981, the Agency published a proposed regulation that included statements required by the Act. (*12*) Simultaneously, a Draft Environmental Impact Statement (DEIS), filed with the Environmental Protection Agency on January 15, 1981, was made available to other Federal agencies and the general public for comment. The February 4, 1981, proposal contemplated granting the Japanese Salmon fishery a general permit for an annual incidental take of 5,500 Dall porpoise in the U.S. FCZ over the next three years. In addition, the Agency announced its determination that a formal hearing before an Administrative Law Judge (ALJ) was necessary to review the population status of Dall porpoise. (*13*) Formal reviews on the other mammals were found unnecessary or not possible: The Steller sea lion and northern fur seal had been previously reviewed, (*14*) and insufficient information existed in the permit application and in scientific literature to attempt review of the other animals. Absent a review, NMFS is unable to grant incidental take permits under the MMPA, and consequently the Applicant's request for a permit covering harbor porpoise, Pacific white-sided dolphin, and killer whale remains unprocessed.

The proposed regulation and all relevant information were reviewed on the record in a hearing held pursuant to 5 U.S.C. 556 and 557. (*15*) The hearings were conducted in Seattle, Washington, on March 5 and 6, 1981. The Assistant Administrator for Fisheries of NOAA, the Marine Mammal Commission, the Federation, and the Environmental Defense Fund (EDF) participated in the hearings.

3. *Issues Considered at the Formal Hearing.* The hearings focused on the following issues and facts: (a) Estimates of existing population levels of Dall porpoise; and (b) the expected impact of the proposed regulations on the OSP of Dall porpoise. These issues involved consideration of (1) whether the scientific evidence was sufficient to make any of the required MMPA findings, (2) future scientific research needs, and (3) the means available to the applicant, if any, to reduce further the mortality of Dall porpoise.

4. *Recommended Decision.* The ALJ issued his recommended decision on April 24, 1981 concluding that:

> Based upon the substantial evidence in the record as a whole, it is the Recommended Decision in this matter that the proposed amendment to the regulations of the National Marine Fisheries Service permitting the taking of Dall porpoise incidental to the commercial salmon fishing operations for the gill net salmon fishing season within the U.S. fishery conservation zone beginning 1981, and continuing through the same fishing season for 1983, be adopted as the final regulations, as amended by any finding of fact, conclusions of law, recommendations, and conditions herein.

The Environmental Defense Fund and the Japan Salmon Fisheries Cooperative Association submitted exceptions to the Assistant Administrator for Fisheries on April 29, 1981. On May 5, 1981, the Marine Mammal Commission filed a motion to strike ex parte communications in the Federation's response to the recommended decision.

B. Decision

1. *Summary of the Decision.* I find, based on the record of the hearing, the ALJ's recommended decision, the exceptions filed thereto and the Final Environmental Impact Statement (FEIS), that the Dall porpoise stock is not depleted and that an allowable take of these animals will not be to the disadvantage of the stock. The record before me indicates that an annual incidental take quota of 5,500 Dall porpoise over the next three years will maintain the stock at or above the minimally acceptable OSP level, and is consistent with the policies and purposes of the Act.

I further find that an annual quota of 5,500 Dall porpoise is economically and technologically feasible and should be set for the three-year period, 1981–1983. The record does not indicate that the 5,500 quota can be reduced technologically at this time. I am directing NMFS to monitor the incidental take of Dall porpoise by the Federation pursuant to the permit issued

today. This permit directs the Federation to conduct research and to report to NOAA on an annual basis regarding its gear research efforts.

The permit and accompanying regulations allow no takings of harbor porpoise, Pacific white-sided dolphin, or killer whale. Takings of these marine mammals are in violation of and subject to prosecution under the MMPA.

The permit directs the applicant to allow monitoring of its incidental take of marine mammals in U.S. waters, conduct gear research, and close its fishing season in U.S. waters when its quota is reached.

2. *Detailed findings.* The recommended decision of the ALJ is attached. In reaching my decision, I adopt and incorporate by reference, unless specifically noted otherwise, the findings of fact, conclusions of law and accompanying rationale of the ALJ. My comments on the recommended decision and the supporting evidence specifically address only points of difference between my decision and that of the ALJ, and issues of importance requiring further elaboration. My discussion follows the format of the recommended decision beginning with Part II of that decision.

a. *Population Estimates*

I adopt the ALJ's approach in determining whether the allowed incidental taking will be to the disadvantage of the marine mammal population stocks. It is consistent with the approach NOAA has taken in a previous rulemaking under the Act (*17*) and, based on the record, is the best scientific method available. (*18*)

(1) Present Population Level

Stock Classification

I adopt the ALJ's finding and supporting rationale that the best scientific evidence available supports the conclusion that only the North Pacific/Bering Sea/Gulf of Alaska stock (North Pacific stock) is affected by the Japanese mothership fishery. (*19*) My decision on Dall porpoise concerns only this stock.

Area

I adopt the ALJ's finding and supporting rationale that the best estimate of area is 3,262,683 square miles. (*20*)

Density

I adopt the ALJ's finding and supporting rationale that the 1978 data is more reliable than that for 1979 and that the line transect model will produce the more reliable estimate of the density of Dall porpoise. (*21*)

The ALJ found that the density figure equals 0.2818 Dall porpoise per square nautical mile throughout the entire region. This figure, based on NOAA data, represents the 1978 density of Dall porpoise in the west-central North Pacific. (*22*) NOAA's evidence indicates that densities varied between the four areas surveyed within the region. (*23*) Utilizing area specific density factors when available provides more accurate population estimates and is consistent with NOAA's approach in previous rulemakings under the Act. (*24*) I find, therefore, that the NOAA area specific density estimates represent the best scientific evidence available on Dall porpoise density.

Present Population of Dall Porpoise

Despite the above finding on density, I adopt the ALJ's 1978 population estimate of 919,424 for the Northern Pacific stock. Utilizing the differing densities for each of the four survey areas, NOAA's expert witness calculated the 1978 Dall porpoise population to be 920,000. (*25*) This result varies insignificantly with the ALJ's figure and has no effect on the outcome of the decision. (*27*)

(2) Initial Population Level

I adopt the finding and supporting rationale of the ALJ that estimating the initial population level requires back calculation—beginning with the present estimated population level, adding the estimated annual incidental kill and subtracting the estimated net annual reproduction. (*28*)

Natural Mortality Rate (M)

I adopt the ALJ's finding of 0.13 natural mortality rate. I find on the record, however, that 0.13 is based on an analogy of body sizes among various stocks of animals not on empirical data. (*29*)

Gross Annual Reproductive Rate (rmax)

Maximum Net Reproductive Rate (Rmax)

I adopt the ALJ's finding that the maximum net reproductive rate (Rmax) of the Northern Pacific stock of Dall porpoise is 0.04. (*30*) This rate is consistent with the range of possible values NOAA suggested (.02 to .12) (*31*) and is supported by the overall testimony in the record.

I note that NOAA found a 0.04 Rmax for *Stenella* dolphins in the Eastern Tropical Pacific in a previous rulemaking. (*32*) The record suggests that Rmax may vary among Dall porpoise and the various *Stenella* dolphins. My decision today does not imply that such variation does not exist.

In addition, one witness suggested using a Rmax of 0.057 based on work done by International Whaling Commission scientists on large whales. (*33*) I find the evidence supporting this value insufficient for its use in the calculations. Moreover, this witness utilized 0.04 in his calculations to determine the initial population level for Dall porpoise. (*34*) I recognize that further research is necessary to determine more accurately the Rmax for Dall porpoise and direct NMFS to continue efforts to assess this parameter.

Incidental Kill Rate (Kt)

Mothership Fishery

I adopt the ALJ's finding and supporting rationale regarding the Japanese mothership salmon fishery incidental kill rate of 0.94 porpoise per set of gill net. (*35*)

Land-based Salmon Gill Net Fishery

I adopt the ALJ's finding and supporting rationale that the land-based salmon fishery incidental kill rate is 0.94 porpoise per set of gill net. No independent observations of the land-based fishery operations exist and evidence estimating the amount of take within this fishery is weak. Dr. Ohsumi's testimony (*36*) suggests that this rate is 60% of the mothership salmon fishery. NOAA's evidence indicated that the rate may equal the mothership fishery but recognized problems in applying a uniform rate over the entire fishery. Conversely, no evidence suggested the rates were not uniform. Absent independent observations of the land-based fishery operations, I find that the land-based salmon fishery incidental kill rate is 0.94 porpoise per set of gill net. (*37*)

Constancy of Kt

I adopt the ALJ's finding and supporting rationale concerning the consistency of the incidental take rate. (*38*)

Calculated Initial Population

I adopt the ALJ's initial population estimate of 1,354,000. (*39*)

b. *Optimum Sustainable Population*

I adopt the ALJ's finding and supporting rationale that the population of the Northern Pacific stock of Dall porpoise is not depleted and that it is permissible to allow some taking of Dall porpoise. (*40*) The current 1980 population of this stock is 68.8 percent of its preexploitation population and above the minimally accepatable OSP level.

c. *Quota and the Projected Impact of Allowed Takings*

I adopt the ALJ's finding and supporting rationale that it is technologically feasible for the Federation to operate a full-effort fishing season while not exceeding the requested quota of 5,500. (*41*)

I further adopt the ALJ's finding and supporting rationale that the total allowable incidental kill of Dall porpoise within the United States FCZ which would maintain at its current level the population of the Northern Pacific stock is greater than the requested quota. This indicates that the allowable take of 5,500 Dall porpoise will not only maintain the stock at its current level, but will also allow it to grow.

Upon making a finding of non-depletion, the MMPA requires me to determine whether the requested quota can be further reduced. (*42*)

Based on the record, I find that the requested quota cannot be further reduced at this time. I am directing, however, the permit applicant to engage in gear research aimed at reducing Dall porpoise mortality and to report annually on its findings to NMFS.

d. *Conditions*

I concur with the ALJ that to make more accurate future determinations and to maintain the North Pacific Ocean stock of Dall porpoise within the range of OSP, a greater research effort is needed to obtain more and precise data. Mindful of this need and of my authority under the Act to impose terms and conditions on incidental take permits, I adopt, unless specifically stated otherwise, the conditions recommended by the ALJ.

(1) Research and Implementation of Modifications

I adopt the ALJ's findings, recommendations and supporting rationale regarding further research including, but not limited to:

(a) Improved survey coverage over the entire range of the affected Dall porpoise stock;

(b) More information on gross annual reproductive rates, natural mortality rates, the maximum net productivity level, and the rate of incidental kill;

(c) Studies on the ecology of Dall porpoise; and

(d) Research and reporting on, as well as implementation of gear modifications to reduce the take of marine mammals.

I have directed NMFS to make every effort to satisfy these research needs and expect full cooperation from the applicant. The conditions in the permit issued today are designed to develop this information.

I also adopt the ALJ's recommendation regarding reporting requirements; condition 9 of the permit issued today specifically covers these requirements in detail.

(2) Monitoring

The issue of extent of observer coverage is a difficult one. The ALJ based his recommendation for 10% observer coverage upon the testimony of a NOAA scientist who stated such coverage would provide a 95% confidence level that the quota would not be exceeded. The record provides no evidence concerning the confidence levels other observer coverage might provide. I agree that better data on incidental take by the mothership fleet is essential and find that an effective monitoring program must be conducted to obtain this data. The MMPA, however, does not dictate that the management regime implemented by the Agency attain a specific confidence level, and I believe that the appropriate confidence level should be determined by the Agency. The Agency should have the discretion to determine what confidence level and coverage is necessary for it effectively to monitor compliance with the quota. Accordingly, I am directing the National Marine Fisheries Service to implement an effective monitoring program to ensure that the quota is not exceeded. The permit can be conditioned on an annual basis to require the appropriate observer coverage. Due to funding constraints placed on the Agency, I also adopt the ALJ's recommendation that the applicant fund the observer program.

The ALJ recommended that the Federation consent to placing observers on its vessels in the land-based fleet. I reject this finding because there is no evidence in the record that the Federation has responsibility or authority over the land-based fishery. (*43*)

(3) Incidental Take Reporting Requirements

I adopt the ALJ's recommendation regarding incidental take reporting requirements. The requirements are incorporated into the permit issued today.

e. *Seabirds*

Judge Vanderheyden strongly recommended that monitorings and research be carried out to ascertain more precisely the magnitude and significance of the incidental seabird mortality associated with the gill net fishery.(*44*) The record indicates that the Japanese salmon gill net fishery takes large numbers of many species of seabirds. The takings may be threatening some of the populations.

In view of the primary marine mammal management objective of the MMPA—to maintain the health and stability of the marine ecosystem, (*45*) I concur with the ALJ's research recommendation.

I recognize, however, the difficulty in establishing such a research program for 1981. A scientifically valid seabird mortality monitoring system may require much experimentation and, thus, months to develop and implement. Although I am not making seabird research a condition of the permit, I strongly encourage the applicant to cooperate with the U.S. and Japanese governments in development and implementation of an appropriate research program. NMFS is prepared to participate, to the extent possible, in developing such a program.

f. *Duration of the Permit*

Finally, I adopt the ALJ's finding and supporting rationale that a three-year permit will best serve to improve the data base while allowing sufficient time for research aimed at improving the fishing gear to reduce the incidental kill and serious injury rate to levels approaching zero. No evidence shows that it is economically and technologically feasible at this time to reduce the incidental take quota below 5,500 over the next three years. Although the 1981 observation and research data is expected to contribute important information on this question, more data are needed to obtain meaningful answers. Issuing the three-year permit will also significantly reduce the costs and administrative burdens involved in the required permit proceedings. Furthermore, if subsequent research results reveal that it is economically and technologically feasible to reduce the quota, the quota will be modified accordingly and the regulation and permit amended before initiation of the 1982 and 1983 fishing seasons.

C. Required Statements

Section 103(d) of the MMPA requires the publication of the following statements: (a) Estimated existing levels of the species and population stocks of the marine mammals concerned; (b) a statement of the expected impact on the optimum sustainable population (OSP) of such species or population stocks; (c) a statement describing the evidence before the agency; and (d) any studies made by or for the agency and any recommendations made by or for the agency or the Marine Mammal Commission, if any. The following table satisfies the first two requirements.

Stock	Present population	Present OSP status	OSP status at end of 1983
Dall porpoise	920,000	Within	Within.

The reference noted in the February 4, 1981 **Federal Register** notice (*46*) and the record compiled in this administrative proceeding satisfy the final two statements.

D. Regulation

The regulation proposed by the Agency on February 4, 1981 (46 FR 10785) is hereby adopted, based on full consideration of the record, the recommended decision and my foregoing final decision. I have considered the alternatives contained in the FEIS and the DEIS and have concluded that the regulation adopted is the environmentally preferred alternative and represents the best approach of permitting the incidental take under the MMPA.

E. Consultation

The Act requires that I consult with the Marine Mammal Commission (MMC) in promulgating regulations. The MMC was consulted prior to publication of the proposal, was a party to the proceedings, and filed briefs with the ALJ.

Additionally, I have consulted with the Secretary of Commerce on this decision.

F. Attachments

The permit to be issued to the Federation of Japan Salmon Fisheries Cooperative Association as a result of this decision and the recommended decision of ALJ Frank Vanderheyden is attached.

G. Effective Date

The permit issued today becomes effective June 10, 1981.

Dated: May 7, 1981.

James P. Walsh,

Acting Administrator.

References

(*1*) 4 U.S.T. 380, T.I.A.S. 2786; 205 U.N.T.S. 65.

(*2*) T.I.A.S. 9842.

(*3*) 16 U.S.C. 1021 *et seq.*

(*4*) The term "depletion or depleted" means any case in which the Secretary, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals determines that the number of individuals within a species or population stock—

(A) has declined to a significant degree over a period of years;

(B) has otherwise declined and that if such decline continues, or is likely to resume, such species would be subject to the provisions of the Endangered Species Act of 1973; or

(C) is below the optimum carrying capacity for the species or stock within the environment.

16 U.S.C. 1362(1).

(*5*) The Act defines optimum sustainable population (OSP) as:

* * * With respect to any population stock, the number of animals which will result if the maximum productivity of the population or the species, keeping in mind the optimum carrying capacity of the habitat and the health of the ecosystem of which form a constituent element.

16 U.S.C. 1362(9).

A working definition of this term was published in 50 CFR 216.3 (1977) by the National Marine Fisheries Service:

* * * 'Optimum sustainable population' is a population size which falls within a range from the population level of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity. Maximum net productivity is the greatest net annual increment in population numbers or biomass resulting from additions to the population due to reproduction and/or growth losses due to natural mortality.

(*6*) 16 U.S.C. 1374; 16 U.S.C. 1373, 50 CFR Part 216 (1979).

(*7*) 16 U.S.C. 1373(a).

(*8*) 16 U.S.C. 1373(d). These procedural requirements have been complied with and are published below.

(*9*) 16 U.S.C. 1371(a)(2).

(*10*) DOO 25–5A, Section 301.V., June 3, 1977.

(*11*) 9th Floor, San Kaido Building, 9–13, Alaska 1–Chrome, Minato-ku, Tokyo, Japan.

(*12*) 46 FR 10785 (February 4, 1981).

(*13*) *Id.*

(*14*) 44 FR 1540 (January 11, 1979); 45 FR 21844 (December 10, 1980).

(*15*) The hearings were also conducted pursuant to procedural rules published on February 4, 1981, 46 FR 10785.

(*16*) Footnote omitted.

(*17*) 45 FR 72178 (October 31, 1980).

(*18*) Recommended Decision, at 14 [hereinafter cited as R.D.].

(*19*) R.D., at 15. Contrary to the ALJ's recommendation, I find based on evidence in NOAA Exhibit 3 and NOAA Exhibit 7, that there are at least three stocks of Dall porpoise.

(*20*) R.D., at 16.

(*21*) R.D., at 20–21.

(*22*) NOAA Exhibit 4, at 20, Table 5.

(*23*) *Id.*

(*24*) See 45 FR 72178, 72181–92 (October 31, 1980).

(*25*) NOAA Exhibit 4, at 20, Table 5. Other estimates of present population suggested were: 837,460 (Federation Exhibit 6, at 20); 1,500,000 (Tr., pp. 140–42); 5,090,000 (Federation Exhibit 4, at 6).

(*26*) Footnote omitted.

(*27*) R.D., at 21.

(*28*) R.D., at 22.

(*29*) R.D., at 23.

(*30*) R.D., at 26.

(*31*) NOAA Exhibit 3.

(*32*) 45 FR 72184, October 31, 1980.

(*33*) Federation Exhibit 4, at 12.

(*34*) *Id.*

(*35*) R.D., at 28.

(*36*) Federation Exhibit 4.

(*37*) R.D., at 30.

(*38*) R.D., at 31.

(*39*) R.D., at 32.

(*40*) R.D., at 32.

(*41*) R.D., at 33.

(*42*) 16 U.S.C. 1371(a)(2).

(*43*) Federation exceptions to the recommended decision, at 13.

(*44*) R.D., at 42.

(*45*) 16 U.S.C. 1361(6).

(*46*) 46 FR 10785, February 4, 1981.

Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C.; General Permit; Category 5: Other Gear

The Federation of Japan Salmon Fisheries Cooperative Association, Sankaido Building, 9–13 Akasaka 1-chome, Minato-ku, Tokyo, Japan, is hereby issued a General Permit for the taking of marine mammals incidental to the course of commercial fishing, in Category 5: Other Gear, subject to the provisions of the Marine Mammal Protection Act of 1972 as amended (16 U.S.C. 1374(h)); the regulations governing the incidental taking of marine mammals (50 CFR Section 216.24); and the terms and conditions hereinafter set out.

A. Limitations on Take

1. The annual incidental take of marine mammals by certificate holders is limited to the following number and species:

a. 5,500 Dall's porpoise (*Phocoenoides dalli*)

b. 450 northern fur seals (*Callorhinus ursinus*)

c. 25 northern (Steller) sea lions (*Eumetopias jubatus*)

2. No marine mammals of a species listed as threatened or endangered under the endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), or designated as depleted under the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.), or for which a take limit has not been authorized, may be taken.

3. No marine mammal may be taken under this permit unless a Memorandum of Understanding between the Government of the United States of America and the Government of Japan and supporting Agreements, as required, have been approved and signed by both Governments.

B. Conditions

1. Marine mammals may only be taken under the authority of this permit by operators of vessels that have been granted a Certificate of Inclusion by the Assistant Administrator for Fisheries, National Marine Fisheries Service, in accordance with 50 CFR 216.24. A Certificate and a translated copy of this permit must be in the possession of the vessel operator at all times while fishing within the U.S. Fishery Conservation Zone.

2. This permit shall be valid for a 3-year period from 0001 hours, June 10, 1981, to 2400 hours, June 9, 1984, subject to annual review by the Assistant Administrator for Fisheries. This review will be based in part on reports required herein and on other information available to the Assistant Administrator for

Fisheries. The terms, conditions, limitations on take, number of observers, and duration may be modified by the Assistant Administrator for Fisheries in such manner as he deems consistent with and necessary to carry out the purposes of the Marine Mammal Protection Act of 1972.

3. At any time the Assistant Administrator for Fisheries has reason to believe that the date on which the allowed take set forth in the General Permit can be determined, he will notify the Permit Holder by any appropriate means and prohibit the further take of the affected species after that date. The Permit Holder shall be responsible for notifying all Certificate Holders of the date upon which no further take is authorized.

4. Marine mammals taken as authorized herein may be taken in the North Pacific Ocean and Bering Sea incidental to the Japanese mothership salmon gillnet fishery within the Fishery Conservation Zone of the United States as provided for in the Annex To The Protocol Amending The International Convention For The High Seas Fisheries Of The North Pacific Ocean.

5. Each Certificate Holder shall:

a. Return dead marine mammals incidentally entangled in gillnets of catcher boats for collection of biological data samples, when feasible and consistent with the laws of both countries.

b. Take every possible step to minimize the killing or serious injury of marine mammals during fishing operations.

c. Maintain a log of all instances in which marine mammals are taken. The log must include for each set:

(i) The location, time, and date of each taking of a marine mammal;

(ii) The species and number of all marine mammals that become entangled and are lost (drop out) as gillnets are hauled, become entangled but escape alive or are released alive during hauling, or captured and brought on board during hauling;

(iii) A description of the circumstances which led up to and caused death or injury; and

(iv) Any other information requested of the Certificate Holder by the Permit Holder.

d. Submit records required by B.5.c. above on a daily basis to the U.S. Government observer onboard each mothership operating within the U.S. Fishery Conservation Zone, or

e. Submit records required by B.5.c. above on a daily basis to the duly authorized Japanese national onboard each mothership operating outside the U.S. Fishery Conservation Zone.

f. Accept a duly authorized representative of the United States Government onboard the certificated vessel to make observations of incidental take and to record data on environmental conditions and on gear characteristics.

6. The Permit Holder shall assist the U.S. Government observers to report by radio on a daily basis to the United States, information on the take of marine mammals and any other data collected under B.5. herein.

7. The Permit Holder shall assist as requested in meeting the objectives of the research program agreed to by the Governments of the United States of America and Japan.

8. The Permit Holder shall provide for and fund marine mammal observers to allow for monitoring and research activities.

9. Reports:

a. Within 30 days of the close of each mothership salmon fishery season, the Permit Holder will submit to the Assistant Administrator for Fisheries, a report detailing what gear modifications were tested either by operating catcherboats or by research vessels performing under actual fishing conditions; the percentage of the catcherboats which operated with modified gear; the effect such modified gear had on both the incidental taking of Dall porpoise and other marine mammals; the effect the modified gear had on the catch of the various target species of salmon; the cost of producing the modified equipment for that season; and a best estimate of the cost for making the modified gear which produced the most favorable results in quantity great enough to outfit the entire fleet.

b. Within 30 days of the close of each mothership salmon fishery, the Permit Holder will submit to the Assistant Administrator for Fisheries the number and species of all marine mammals taken by each mothership fleet.

10. The Holder of this General Permit, and of each Certificate of Inclusion issued hereunder, shall not transfer or assign the General Permit or Certificate of Inclusion to any other person.

Dated: May 7, 1981.

William H. Stevenson,

Acting Assistant Administrator for Fisheries, National Marine Fisheries Service.

Department of Commerce

National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C.

Recommended Decision [1] of Frank W. Vanderheyden, Administrative Law Judge

In the matter of proposed regulations to govern the taking of marine mammals incidental to commercial Salmon fishing operations Docket No. MMPAH 1981-1.

Appearances:

Ronald S. Naveen, Esquire, Office of the General Counsel, 3300 Whitehaven Street, NW., Washington, D.C. 20235, for the National Marine Fisheries Service and the National Oceanic and Atmospheric Administration.

John A. Hodges, Esquire, Peabody, Rivlin, Lambert & Meyers, 1150 Connecticut Avenue, NW., Suite 1200, Washington, D.C. 20036, for the Federation of Japan Salmon Fisheries Cooperative Association.

Robert Eisenbud, Esquire, General Counsel, Marine Mammal Commission, 1625 I Street, NW., Washington, D.C. 20006, for the Marine Mammal Commission.

Curtis N. Epperson, Esquire, Epperson and O'Shea, Suite 300, The Globe Building, 9725 SE. 36th Street, Mercer Island, Washington 98040, for the Environmental Defense Fund.

[1] In keeping with the expedited nature of this proceeding, any exceptions to this Recommended Decision, together with supporting briefs, must be filed with the Director, National Marine Fisheries Service, within five (5) days of the service date shown above. An original and one copy of the Exceptions shall be served on the Director, with copies to all parties and the undersigned.

Table of Contents

Introduction

I. Background
- A. Salmon fishery
- B. Scientific Cooperation
- C. Socio-Economic Importance
- D. Permit Application

II. Marine Mammal Protection Act

III. Incidental Take of Marine Mammals
- A. Generally
- B. Mothership Fishery
- C. Land-based Fishery

IV. Population Estimates
- A. Present Population Level
- 1. Stock Classification
- 2. Area
- 3. Density
  - a. Strip Transect Model
  - b. Line Transect Model
- 4. Present Population of Dall Porpoise
- B. Initial Population Level
- 1. Natural Mortality Rate
- 2. Gross and Net Reproductive Rates
- 3. Incidental Kill Rate
  - a. Mothership Fishery
  - b. Land-based Fishery
  - c. Constancy of Kill Rate
- 4. Calculated Initial Population

V. Optimum Sustainable Population

VI. Quota

VII. Conditions
- A. Continued Efforts to Reduce Incidental Take
- 1. Research
- 2. Monitoring
- 3. Seabirds
- 4. Attainment of Quota

VIII. Duration of Permit

IX. Recommended Decision

Introduction

Public hearings, concerning the application of the Federation of Japan Salmon Fisheries Cooperative Association (Federation) for a general permit under the Marine Mammal Protection Act to allow the taking of marine mammals incidental to this commerical fishery, were held before the undersigned administrative law judge appointed pursuant to 5 U.S.C. 3105 of the Administrative Procedure Act (APA). The hearings took place in Seattle, Washington, on March 5 and 6, 1981. They were conducted in accordance with §§ 556 and 557 of the APA, and with regulations promulgated for an expedited proceeding. 46 FR 10785 (February 4, 1981.) The record consists of 475 pages of transcript and 26 exhibits. Interpreters were used in those instances where some witnesses spoke only the Japanese language.

Opening briefs were served on March 20, 1981, reply briefs on March 31, 1981, and oral argument was had on April 1, 1981. The Recommended Decision is sought within 23 days thereafter. All parties who appeared filed briefs and participated in oral argument. Matters raised in briefs have been

considered, and unless discussed specifically below are either rejected or not considered of sufficient import for particular mention in resolving the issues concerned in the proposed regulations.

Findings of Fact and Conclusions of Law

I. Background

A. Salmon Fishery

The Dall porpoise mortality question is interrelated with the Japanese salmon fishery. This fishery has a history in Japan extending from the 19th centry, with its beginnings off the Sakhalin and Kurile Islands and the Maritime Provisions of Siberia. It developed into both coastal and factory-ship type operations. Following the hostilities of World War II, and with the signing of the United States/Japanese Peace Treaty in May, 1952, Japan resumed the salmon fishery. However, due to the loss of its historical inshore fishery sites in Siberia, Japan developed a high seas salmon fishery in the form of mothership and land-based fisheries. Also in May, 1952, the United States, Japan and Canada executed the International Convention for the High Seas Fisheries of the North Pacific Ocean (INPFC).[2] At this time, there was no Pacific salmon fishery in international waters except for U.S. and Canadian offshore troll fishing, and little was known about the oceanic migration, and exploitation on the high seas of Asiatic and North American salmon stocks. Among other purposes, the INPFC was to examine these questions. Additionally, Japan agreed to abstain from fishing for salmon in the North Pacific Ocean east of a line at 175° W. longitude and in the Bering Sea. Japan and the U.S.S.R. entered into a Fisheries Treaty in 1956, which provided for annually negotiated catch quotas for salmon caught on the high seas adjacent to Soviet territorial waters, for the mothership and land-based fisheries. Stemming from this Treaty, Japan was prohibited from salmon fishing throughout the Sea of Okhotsh in 1959, and in 1962 this exclusion was extended to all Northwest Pacific waters.

In 1976, Congress passed the Fishery Conservation and Management Act (FCMA), 16 U.S.C. 1801, *et seq.*, which established a 200 mile fishery conservation zone (FCZ). Japan and the Soviet Union also established similar conservation zones. As a result, the INPFC was renegotiated in recognition of the authority of these coastal nations to manage their fishery resources within the FCZ, and also to consider the known distribution of salmon of North American origin. This Protocol,[3] amending the INPFC, permitted fishing by the Japanese mothership inside the FCZ of the U.S. The abstention line was moved to 175° E. longitude, with the exception of a portion of the North Central Bering Sea outside the U.S. FCZ. Additional areas where North American salmon and marine mammals were protected included approximately 775,000 square miles outside the U.S. FCZ. The Protocol also called for a scientific program of coordinated scientific research on marine mammals caught while fishing for anadromous fish species. The Japanese fleet, in return, was allowed to fish for salmon in 70,000 square miles inside the U.S. FCZ.

An Annex to the Protocol provided that the requirement by the U.S. of Japanese vessels engaged in the salmon fishery within the U.S. FCZ to have on board a Certificate of Inclusion relating to the incidental taking of marine mammals be suspended until June 9, 1981. During this period the U.S. and Japan were to conduct research to determine the effect of Japanese salmon fishery on the marine mammal population, and to work to reduce or eliminate the incidental catch of marine mammals in the fishery. The North Pacific Fisheries Act of 1954, 16 U.S.C. 1021, *et seq.*, implemented the INPFC and was amended in 1978 to reflect the Protocol and its Annex concerning marine mammal research. This Act also provided that after June 9, 1981, the taking of marine mammals incidental to fishing operations by Japanese vessels within the U.S. FCZ shall be regulated by the Marine Mammal Protection Act of 1972, 16 U.S.C. 1361, *et seq.*

B. Scientific Cooperation

Scientific cooperation between the U.S. and Japan has been carried out, in part, in the following manner:

Scientific teams, each composed of one marine biologist and one salmon observer were assigned to four Japanese motherships in the 1978 fishing season, to gather information on incidental take of porpoise and to obtain biological specimens for estimating life history.

A U.S.-Japanese Cooperative Research Program on Dall porpoise is conducted under the auspices of the INPFC. The project investigates abundance, food habits, population dynamics and other related aspects of the biology of Dall porpoise. In 1979 and 1980, in addition to eight vessels for salmon research, the Japanese dedicated a vessel to porpoise research at their own expense.

The cost of the dedicated vessel for the years 1979 and 1980, borne by the Japanese, has totaled about $700,000. In addition, the cost to the Japanese for observers from 1978–1980 has been $187,968.

During the 1980 fishing season, some experimental operations were carried out with modified nets into which nylon air-tube threads were partially interwoven. By such procedure, it was thought the porpoise may more easily detect the presence of the gill nets. However, the data collected to date has been inconclusive on the effectiveness of such a procedure. Additional research by the Japanese is planned for 1981 and onward.

C. Socio-Economic Importance of Salmon to Japan

For many years, salmon has been a traditional seafood for the Japanese people. It is a necessary festive fish for the New Year's season. In Japan's northern climate, it is an important fat and protein resource for weathering the cold; in the warm weather, salted salmon is favored as an appetizer. Concerning the economic importance of the salmon fishery to Japan, the production of the mothership salmon fishery in recent years has ranged between $60 and $90 million annually, representing approximately 14 to 17 percent of Japan's total salmon fishery. Additionally, approximately 280,000 Japanese workers and their families are involved directly or indirectly with the mothership salmon fishery. Their 1977 total annual earnings amounted to $1.7 billion.

D. Permit Application

By letter dated January 14, 1981, and attachment, the Federation, pursuant to Section 1374 of the Marine Mammal Protection Act (MMPA)[4] and the appropriate regulations promulgated in accordance with Section 1373, filed an application for an incidental take permit, Category 5, "Other Gear" salmon drift gill net. The permit application requests a three year term (1981–1983) and estimates that the maximum number of marine mammals expected to be incidentally taken on a yearly basis by the Japanese salmon fishery within the U.S. FCZ as follows: Dall porpoise (*Phocoenoides dallii*), 5,500; harbor porpoise (*Phocoena phocoena*), 50; Pacific white-sided dolphin (*Lagenorynchus obliquidens*), 25; killer whale (*Orcinus orca*), 25; Steller sea lion (*Eumetopias jubatus*), 25; and northern fur seal (*Callorhinus ursinus*), 450. (46 FR 10785, Feb. 4, 1981; NOAA Ex. 1.)

Only the Dall porpoise is substantively involved in this proceeding, because of the minimal incidental takings of the other marine mammals. If the permit application is granted as requested for the Dall porpoise, 50 CFR 216.24(d)(5) would be amended by adding a new subparagraph (vii) reading as follows:

(5) * * *

(vii) The number of Dall's porpoise (*Phocoenoides dallii*) killed or seriously injured by Japanese vessels shall be limited to 5,500 animals per year. Any permit issued under this regulation shall indicate the measures by which the permit holder shall comply with the reporting requirements of paragraph (d)(5)(v) of this section. Any incidental take permit issued under this regulation shall allow retention of marine mammals for scientific research purposes and not require a separate permit under paragraph (d)(5)(iv).

In addition, should the application be granted, it must include certain conditions enumerated hereafter.

II. Marine Mammal Protection Act

The Act establishes a moratorium on the taking[5] and importing of marine mammals which may be waived to allow marine mammals to be incidentally taken in the course of commercial fishing operations. The taking of marine mammals is to be in accordance with permits issued by the National Marine Fisheries Service (NMFS)

[2] 4 U.S.T. 380; T.I.A.S. 2786; 205 U.N.T.S. 65.

[3] T.I.A.S. 9842.

[4] 16 U.S.C. 1361, *et seq.* (Hereinafter, the title number of the U.S. Code, and the word "Act" will be omitted in referencing sections of the statute.)

[5] The term "take" has a meaning much broader than killing a marine mammal. "Take" means to "harass, hunt, capture or kill, or to attempt to harass, hunt, capture or kill any marine mammal." 16 U.S.C. 1362 (13).

pursuant to Section 1374, subject to regulations promulgated in accordance with Section 1373. In pertinent part, subsection (a) of the latter section directs that the Secretary (of Commerce) "on the basis of the best scientific evidence available" shall prescribe such regulations concerning the taking of marine mammals which will "insure that such taking will not be to the disadvantage of those species and population stocks * * *." Section 1373(b) provides that in prescribing regulations full consideration shall be given to all factors which may affect marine mammals including, but not limited to, the effect of such regulations on:

(1) Existing and future levels of marine mammal species and population stocks;

(2) Existing international treaty and agreement obligations of the United States;

(3) The marine ecosystem and related environmental considerations;

(4) The conservation, development, and utilization of fishery resources; and

(5) The economic and technological feasibility of implementation.

Section 1371(a)(2) declares, in part, that an immediate goal is to reduce the incidental kill or serious injury of marine mammals permitted in the course of commercial fishery operations to insignificant levels approaching a zero mortality and serious injury rate.

Congress, in pertinent part, found in Section 1361(2) of the Act that marine mammals should not be permitted to diminish below their "optimum sustainable population" (OSP). This term is defined in Section 1362(9) to mean that with respect to any population stock, the number of animals which will result in the "maximum productivity" of the population, keeping in mind the "optimum carrying capacity" of the habitat and the health of the ecosystem of which they form a constituent element. In Section 1362(8) "optimum carrying capacity" is defined to mean the ability of a given habitat to support the OSP of a species or stock in a healthy state without diminishing the ability of the habitat to continue that function. In further clarification, OSP is defined as "a population size which falls within a range from the population level of a given species or stock which is the largest supportable within the ecosystem to the population level that results in maximum net productivity." (41 FR 55536, Dec. 21, 1976; 50 CFR 216.3.) In further refinement, "maximum net productivity" (MNP or MNPL) is said to be the greatest annual increment to the population due to reproduction and growth less losses due to natural mortality. MNP is interpreted as being the lower limit of the range of OSP. (45 FR 72178, Oct. 31, 1980.)

III. The Incidental Take of Marine Mammals in the Salmon Fishery

A. Generally

The types of Japanese salmon fisheries which affect the Dall porpoise are the mothership and land-based operations. Both fisheries utilize salmon gill nets. In such method, a salmon gill net, 8 meters deep and 15 kilometers long, is set along the surface of the water at dusk and retrieved in the morning, in order to take advantage of the nature of salmon to approach the surface at night to feed. It is known that salmon feed on zooplankton, myctophid fish and small squid which come up near the surface at dark. The normal soaking time of the nets in the sea is an average of 11 to 12 hours. The evidence is strong that Dall porpoise, seeking to feed on some of the same food as the salmon, become accidentally entangled in the drift gill net and drown or suffocate. Mortality from the gill nets also results to sea birds on a large scale, and to some other marine mammals on a much smaller level than to Dall porpoise.

The following restrictions are placed on mothership gill nets as a result of a Protocol to the Japan/U.S.S.R. Fishery Cooperative Agreement:

(1) The length of the gill net set by each catcher boat is not to exceed 15 kilometers (8.2 nautical miles.)

(2) The interval between any two net sets should be at least 8 kilometers (4.37 nautical miles) in any direction.

(3) Under normal conditions the drift gill net hangs from the surface to about 6 to 8 meters (about 19 to 26 feet) deep in the water. The mesh size is to be at least 65 mm. (2.6 inches) for about 60 percent of the total number of nets, and the remainder 60 mm. (2.4 inches).

The salmon are caught by entangling their gills in the meshes of the net. One or more radio beacons are attached to the gill net, as well as light buoys and flags, to aid in locating it for retrieval. The use of gill nets is a passive fishing method to be distinguished from the tuna purse seine fishery in the eastern tropical Pacific Ocean where tuna fish are actively encircled by nets.

Dall porpoise comprise by far the largest part of the marine mammals incidentally taken by gill net fisheries. As a result of both the salmon fishery period and areas being reduced under the INPFC, and the Japan/U.S.S.R. Agreement, it is difficult for the Japanese gill net fishery to select fishing grounds or to adjust the periods of fishing operations to avoid some incidental taking of Dall porpoise.

The entanglement in gill nets of Dall porpoise, or other marine mammals, reduces the efficiency of the Japanese salmon fishery operations because the entanglement of the marine mammals: (1) Damages the nets, (2) disentangles or scares away salmon which otherwise may have been caught, (3) increases the difficulty of hauling in the nets due to the added weight of the entangled marine mammals.

B. Mothership Fishery

The Japanese mothership salmon fishery has as its objective salmon originating in the Asian continent, mainly from the U.S.S.R. At the peak of its operation in the 1950's, Japan utilized 16 motherships and 577 catcher boats. However, with area and seasonal restrictions, these operations have been reduced drastically. Currently, there are a total of 172 catcher boats directly engaged in fishing for salmon, and four motherships which receive their catches. These vessels make up four fleets, each fleet consisting of one mothership and 43 catcher boats operating as a unit.

The total catch of salmon by the Japanese mothership salmon fishery, in the period from 1952–1980 is estimated to be over 678 million fish, ranging from a high in 1957 of over 50 million, to a low in 1980 of over 7 million salmon.

C. Land-based Fishery

The major ports of the Japanese land-based salmon fishery are located on the Islands of Hokaido, Kushiro and Nemuro. The fleet operates in the northwest Pacific waters for about a month before returning to their home ports. This fleet generally fishes south of the motherships' area. Another major distinction between the land-based and that of the mothership fleets is that in the case of the latter, the catch is returned every day to the mothership where it is quickly frozen. In the land-based fishery, all the catch taken during the month is stored on the vessel until taken to port. the most common vessels used in this fleet range from 60 to 80 tons in weight, while the catcher boats in the mothership weigh around 96 tons. In this fishery, the space between the nets is 6 kilometers, as distinguished from 8 in the mothership endeavors. Also, in the land-based fishery, the mesh size of the gill net should be over 55 mm. Though the figure was higher in previous years, there were 209 medium sized vessels in the land-based fleet in 1980.

In the land-based fishery, the total number of salmon caught from 1952 to 1980 was about 844 million, with a high in 1959 of over 46 million. In 1980, the estimated catch was about 16½ million fish.

IV. Population Estimates

In order to grant a permit to allow the Japanese mothership salmon fishery to take Dall porpoise incidental to its commercial fishing operation, Section 1373(a) commands that it must be determined, based on the best scientific evidence available, that incidental takings of the marine mammals will not be disadvantageous to the population stock. Determining the effect of the regulations on existing and future levels of marine mammals and population stocks requires an assessment of: (1) Present abundance of Dall porpoise, (2) its pre-exploitation stock size, (3) OSP, and (4) the projected impact of the allowed takings.

A. Present Population Level

(1) *Stock Classification.* In order to ascertain the impact that the Japanese mothership salmon fishery's permitted kill of Dall porpoise will have on the species, it is necessary to make a finding concerning what porpoise-types comprise these stocks and whether the fishery involved affects one or more stocks. It also must be determined how many stocks are affected in order to calculate both the present and the pre-exploitation population levels of the Dall porpoise.

The evidence supports the conclusion that there are three stocks of Dall porpoise: (1) Japanese Pacific coastal stock composed mostly of *Phocoenoides dallii truei,* (2) the Sea of Japan and Okhotsk Sea stock consisting of *Phocoenoides dallii,* and (3) the west-central North Pacific/Bering Sea/Gulf of Alaska stock composed of *Phocoenoides dallii.*

There is an assertion that the Sea of Japan/Okhotsk Sea stock commingle with the North Pacific/Bering Sea/Gulf of Alaska stock.

However, this contention is not supported by evidence which would indicate the extent of purported commingling or that these groups of Dall porpoise do not belong to separate stocks that occasionally overlap in their range, but do not interbreed. More research needs to be conducted in order to more competently ascertain the stock situation. There is a dearth of evidence for including the Japanese Pacific coastal stock in the population calculations.

It is found that the best scientific evidence available supports the conclusion that only the North Pacific/Bering Sea/Gulf of Alaska stock (North Pacific stock) is affected by the Japanese mothership salmon fishery.

(2) *Area.* The area inhabited by Dall porpoise affected by the Japanese salmon gill net fishery has been estimated from a low of 3,262,683 square miles to a high of 4,300,000 square miles. The lower figure rests upon the premise that only Dall porpoise inhabiting the North Pacific, the Bering Sea and the Gulf of Alaska are affected by the Japanese mothership salmon fisheries. The higher number is based upon the argument that not only are the North Pacific stock affected, but also those Dall porpoise occupying the Okhotsk Sea.

It is found that the lower figure of 3,262,683 square miles is the best estimate. This finding is based not only upon the finding that only the North Pacific stock is affected, but also on an acceptance on the part of one of the Federation's expert witnesses of excluding porpoise in the Seas of Japan and Okhotsk from his population estimates. (FJS Ex. 6, p. 20).

(3) *Density.* The next step in assessing the present population level is to determine the density of porpoise in the area affected by the Japanese mothership salmon fishery. This is done by multiplying the area occupied by the North Pacific stock of Dall porpoise by their density in that region. Two methods of statistical analysis were utilized to determine density of the porpoise in their inhabited space: A strip transect and a line transect. Both of these models are based on certain assumptions, and both introduce certain biases due to observer efficiency and undetected movement of the porpoise.

(a) *Strip Transect Model.* The strip transect model functions by counting all of Dall porpoise sighted within a strip extending a certain distance from the survey ship. During the 1978 and 1979 surveys, 100 meter, 200 meter, and 400 meter strips were used. By determining how many of these porpoise were sighted within a certain strip, it is possible to statistically extrapolate the total number of Dall porpoise present in the total area which they inhabit.

One assumption upon which the strip transect model is based is that all of the porpoise within the strip are sighted. If this supposition is not met, then the estimates obtained from this method are invalid. A factor related to the possibility of not sighting porpoise within a strip is that the sighting efficiency decreases with an increase in distance from the vessel. If the probability of sighting animals decreases with distance from the survey ship, the assumption of the strip transect model that all animals within the defined strip-width are sighted is violated. As a result, using a strip-width greater than 200 meters may result in a density estimate which is biased downwards, and therefore a lower estimate of abundance is obtained. Thus, a strip-width of 200 meters would yield a less biased estimate of abundance.

Another premise upon which the strip transect model rests is that the porpoise do not move before being sighted. However, there is much evidence that Dall porpoise do move and are, indeed, attracted to vessels. Such an occurrence decreases the confidence one can place in the strip transect model for estimating the present population of Dall porpoise.

(b) *Line Transect Model.* The line transect model functions by recording the number of Dall porpoise sighted and their right angle distance to the line, the line being the path of the survey vessel. The line transect model does not rely upon strips; any and all porpoise sighted are used in the model. Again, by using this data it is possible to statistically extrapolate the total number of Dall porpoise which occur in the total area which they inhabit.

The line transect model is based on the following four assumptions, listed in the order of their importance:

(a) All animals within the range of vision of the vessel are seen;

(b) The animals do not move before being detected and none is counted twice;

(c) Distances and angles are measured exactly, so that neither measurement nor rounding errors are introduced;

(d) Sightings are independent events. For example, the sighting of one porpoise or one school does not increase the probability of sighting another.

Examination discloses that assumptions (a), (b) and (d) are common to both the strip and the line transect model. As such, none of these three assumptions can be utilized to suggest that one model is superior to the other. Further, the degree to which any of these three assumptions may or may not be breached is equal for both models.

Assumption (c), that distances and angles are measured exactly, is critical. The measurement of distance at sea is extremely difficult. Dall porpoise swim swiftly, sometimes attaining speeds as high as 30 knots. Also to be weighed are the speed and yawing of the vessel, and the lack of resolution of rangefinders at distances in excess of a few hunderd meters. The aforementioned all combine to increase the possibility that this assumption is violated to some degree.

It is contended that these measurement problems will tend to increase the variance (reliability) of the estimate, but will not necessarily change the magnitude. Notwithstanding, one great advantage that the line transect model holds over the strip transect method is that all data can be utilized in the line transect model while some data must be discarded when using the strip transect procedure.[6] This data is disregarded within the strip. In theory, the line transect model does not have this disadvantage.

Clearly, the estimation of the density of Dall porpoise from shipboard surveys is not without problems. The waters are further muddied by alleged problems concerning the quality of the 1978, as opposed to the 1979, data. Observers in 1978 were, ostensibly, less trained and experienced than those in 1979. However, there was much less survey effort in 1979 than 1978. The data base in 1978 was four times greater than that of 1979. Such a sizeable difference is a salient consideration, with variance (reliability) sensitive to data base size. An estimate resting upon the 1979 data is less reliable than that for 1978, due to the former's smaller base.

It is found that the line transect model minimizes the bias introduced by observer inefficiencies and permits the use of all the sighting information in the survey, and that such method will produce the optimum estimate in terms of reliability. It is also found that the density determined by the 1978 line transect model analysis is the more reliable figure. Using the 1978 data, it is further found that based upon the best scientific evidence available, the density figure equals 0.2818 Dall porpoise per square nautical mile. (NOAA Ex. 4, p. 20, Table 5.)

It should be noted that this finding does not discredit the strip transect model as a scientific population estimation technique. Further research in years ahead may demonstrate much improvement in the reliability of population estimates derived from the strip transect model. The finding here that the line transect model produces the optimum estimate in terms of reliability is based upon the evidence within the record, and should in no way prejudice the consideration of strip transect estimates in future proceedings.

(4) *Present Population of Dall Porpoise.* The population of Dall porpoise is equal to the area times the density of Dall porpoise in that area. Having found the area inhabited by the North Pacific stock to be 3,262,683 square nautical miles, and the density to be 0.2818 porpoise per square nautical mile within that region, the calculated 1978 population of Dall porpoise equals 919,424.

At this point, it is important to consider how this figure compares with the estimates produced by the other analyses. A calculated present low population of 460,100 was determined by employing the 1978 strip transect model, based upon a 400 meter strip. At the other end of the range is an estimated population of 5,090,400, resting upon witness Ohsumi's 1980 estimate extrapolated to 4,300,000 square nautical miles. This is a range in population by a factor of about 10. The spread, however, was much narrower according to other estimates: 575,000 to 2,327,100 porpoise. The great discrepancy existing between the estimates is understandable considering the task. However, the calculated 1978 figure of 919,424 is supported by the weight of the evidence, and this is found to be the population of the Dall porpoise in 1978. Using the data upon which the 1978 population finding is made, the 1980, or more current

[6] For example, utilizing a 400 m strip, a porpoise sighted at a 450 m right angle distance will not be included in the data. Such a sighting, however, would be included in the line transect method.

population is found to be approximately 931,500.[7]

B. *Initial Population Level.* In order to estimate the initial population level, one must calculate backwards, starting with the present estimated population level, adding the recorded annual incidental kill rate (k_t) and substracting the net annual recruitment rate (R_{max}). The reliability of such a back calculation is directly related to the reliability of the factors involved in the equation: present population estimate (N_t), discussed above, natural mortality rate (M), gross annual reproductive rate (r_{max}) and maximum net reproductive rate (R_{max}), and incidental kill rate (k_t). These last four factors will be treated individually.

(1) *Natural Mortality Rate (M).* The record supports a rate of 13 percent for natural mortality of the Dall porpoise. The foundation for this declared rate rests with witness Ohsumi (1979). Though widely accepted and utilized in calculations, this 13 percent figure is not derived from direct study of species mortality. Rather, it is information based upon empirical data of Dall porpoise by body size and body count.

The figure is of critical importance to the back calculation and the final determination of the status of the stock. However, one witness to this proceeding testified that "[o]ur data do not lend themselves to clear estimates of the rate of natural mortality, so we rely on Dr. Ohsumi's estimate that the natural mortality is about 13 percent of the population per year." (NOAA Ex. 9, p. 3.) Though the figure is not a "clear estimate," it is assumed to have been constant for the past 28 years in order to calculate the initial (1952) population. The reliability of this figure is in doubt, especially as to its constancy over the years from 1952. Notwithstanding this weakness, and in light of the need for further research into the question of the natural mortality rate, the record evidence supports this figure. It is observed further that the 13 percent is not unreasonable, and the record does not contain any allegation to that effect. It is found that the natural mortality rate for Dall porpoise is 13 percent. This is based on the only scientific evidence available in the record which, with more research, may or may not disclose to be the "best" evidence available.

(2) *Gross Annual Reproductive Rate* (r_{max}). *Maximum Net Reproductive Rate* (R_{max}).— The gross annual reproductive rate is the ratio of the total of all individuals added to a population by birth or immigration to the total number of individuals in that population. The maximum net reproductive rate (R_{max}) is derived by substracting the natural mortality rate (M) from the gross annual recruitment rate (r_{max}), or $R_{max} = r - M$.

Once again there is a wide range in the suggested values of the gross annual reproductive rates. The gross annual reproductive rates presented in the evidence varied from 0.15 to 0.36. This results in a range of R_{max} from 0.02 to 0.23.

This high estimate of 0.36, derived from the 1979 survey, is higher than gross annual reproductive rates estimated for other species of porpoise. This may be due to an overrepresentation in the indicental take of pregnant females, who may be concentrating in the fishing area, or may possible indicate an annual reproductive cycle. There is some evidence that the oceanic areas employed by the Japanese mothership salmon fishery overlap with the calving grounds of Dall porpoise. If this is the case, a bias would be introduced which would tend to increase the calculated rate. A 36 percent rate of gross annual reproduction was not accepted by the National Marine Mammal Laboratories because " * * * it resulted in an unrealistic maximum net recruitment rate of 0.23." This high rate was also criticized as being unacceptable when compared to *Stenella* porpoise which inhabit the eastern Tropical Pacific. There was no credible evidence in support of using this high rate.

The next lower rate, that derived from the 1978 Japan-U.S. research program, is 0.25, which results in an R_{max} of 0.12, by subtracting natural mortality (M) from the gross annual reproductive rate (r_{max}). This figure was accepted by the Federation as being the upper bound in estimating the pre-exploitation population level of Dall porpoise. It was also accepted by the NMFS as being the most reasonable rate, based on comparisons with other porpoise, especially the *Stenella*.

However, this same witness testified that "[g]iven the quantity and quality of the data we had, we are almost certain—grasping for straws." (Tr. 428.) This witness went on to testify, "We purposely used a value that we knew, or assumed to be biased, on the high side, to represent the upper limits of the range." The evidence shows that 0.25 for the gross annual reproductive rate with the resultant 0.12 maximum net recruitment rate is the upper bound of the possible reproductive range for Dall porpoise.

The lower bound of the gross annual reproductive rate range was alleged to be 0.15, or a maximum net reproductive rate of 0.02. This rate, however, is lower than what was administratively found for the net reproductive rate for porpoise in the eastern Tropical Pacific. (45 FR 72184, Oct. 31, 1980.) An R_{max} of 0.04, was also utilized by witness Ohsumi in his calculations to determine the initial population level for Dall porpoise, referring to this rate as "conservative but previously accepted rate" for the R_{max} for tropical porpoise and great whales.

There was some testimony concerning the similarities and differences between *Stenella* porpoise of the eastern Tropical Pacific, which has an R_{max} of 0.04, and Dall porpoise. However, there is no convincing evidence that the differences between these two species support utilizing the other end of the extreme, an R_{max} of 0.12, for the back calculation. In fact, the one witness arguing in favor of this high rate of R_{max}, 0.12, acknowledged that he did not have an estimate based on the data for recruitment. (Tr. 405.)

Many witnesses indicated some willingness to accept an R_{max} rate of 0.04, and a key witness for the Federation utilized this rate in his calculations. Keeping in mind the lack of reliable data on this critical factor in population dynamics, and the conservative approach of the Act, it is found that the gross annual reproduction rate for the Dall porpoise is 0.17 with a resultant R_{max} (net reproductive rate) of 0.04.

(3) *Incidental Kill Rate* (k_t). While a consideration of maximum net reproductive rate measures births and deaths from natural causes, it does not account for removals from the population caused by fishing mortality. This factor requires an estimate of the number of animals killed in the salmon gill net fisheries since its initiation in 1952. The chosen estimate is then utilized in the back calculations according to the population dynamics model set forth in NOAA Exhibit 14, and accepted by the Federation.[8]

Both the Japanese mothership and land-based salmon fishery affect the Dall porpoise population by incidentally taking Dall porpoise of the North Pacific stock.

(a) *Mothership Fishery.* The estimate of incidental take of Dall porpoise per set of gill net (k_t) range from a low of 0.06 to 0.10, to a high of 2.6. The low reported rates stem from a misunderstanding of the word "take" as used in the Act and the Memorandum of Understanding negotiated and signed by the U.S. and Japan in 1978. As a result, the Japanese did not report animals as "taken" animals that were shaken or dropped out of the gill nets. (FJS Ex. 1, p. 11.) The animals reported taken were only those actually returned on board the mothership for examination by U.S. biologists. It is expected that such a misunderstanding will not be repeated. However, it must be made clear at this point, that a porpoise which gets entangled in the net is presumed not to survive the ordeal. Taking this into consideration, the Federation readjusted its k_t rate, and derived a mothership rate of 0.94 porpoise killed per set of net. (FJS Ex. 4, p. 17.)

The high estimate of 2.6 porpoise killed per set was determined from data collected by U.S. observers aboard the vessel dedicated to marine mammal research. The reliability of this k_t rate is questionable, however. For example, the net was set in three separate pieces rather than in one piece as is the normal commercial practice. The additional pieces or ends allegedly caused a higher rate of entanglement per set. Further, the 2.6 figure was derived from a very few observations, 10 sets, resulting in an extremely high variance associated with this estimate.

There is a lack of convincing evidence to support the 2.6 rate. It is found that the best estimate for the incidental take rate of Dall porpoise by the Japanese mothership salmon fishery is 0.94 porpoise taken per set of gill net.

(b) *Land-based Salmon Gill Net Fishery.* There have been no independent observations of the land-based fishery operations, and therefore no reliable

[7] See Appendix A, Part (b), for formulae used in these calculations.

[8] The formula shown on FJS Ex. 4, p. 11, for a back calculation of initial population is the same as the formula shown in NOAA Ex. 3, p. 36. However, it is noted that these formulae are different from that shown in NOAA Ex. 14. It appears that the first two formulae are apparently for future year calculations, while the last formula is designed for back calculation, and has been utilized in this proceeding. (Appendix A, part (a).)

estimates of incidental take of Dall porpoise in this fishery. A k_t rate of 0.564 was utilized by the Federation, based on the assumption that the landbased k_t is 60 percent of the mothership rate.[9] However, there was an absence of evidence concerning whether the land-based fishery employed different gear than that used in the mothership fishery. Without this knowledge, there is no support for the 0.564 assumption in the land-based fishery. Also, because the take and effort of the land-based fishery in 1978 was concentrated in the area adjacent to and south of the mothership fishery, similar take levels in the two fisheries are not unlikely. Since there has been no independent observations of the land-based fishery operations, the differences in the incidental take levels cannot be explained. If there were reporting inaccuracies of the incidental take rate as in the mothership fishery, then the take may be higher—similar to that of the mothership fishery.

In light of the aforementioned, it is found, (1) both fisheries should be taken into account when determining the total take rate of Dall porpoise for purposes of the back calculation, and (2) the take rate of the mothership and land-based fisheries is the same: 0.94 porpoise per set of gill net.[10]

(c) *Constancy of* k_t. It is open to question whether the take rate has remained constant from 1952 to the present. In that no evidence was submitted concerning how this assumption should be modified, the undersigned is constrained to accept the constancy of the rate while recognizing the frailty of it. The same observation applies to much of the other data and assumptions in the record.

(4) *Calculated Initial Population.* Based upon these findings, N_{1980}=931,500 (rounded), R_{max}=0.04, r_{max}=0.17, M=0.13, and k_t=0.94 times the total number of sets for both the land-based and the mothership gill net fisheries (Appendix B), the calculated initial population (1952) of the North Pacific stock of Dall porpoise was approximately 1,354,000.[11]

V. Optimum Sustainable Population

The statutory definitions of OSP and MNPL have been noted earlier. The issue presented by the definition of the latter is determining what population level results in the MNPL. In the specifics of this proceeding, what is the MNPL for the North Pacific stock of Dall porpoise? The NMFS has assumed that the MNPL level for the North Pacific stock of Dall porpoise is 60 percent. This figure has also been accepted by the Federation, and employed by it in making back calculations.

The validity of 60 percent did not go unquestioned, however. At one point, it was characterized as "expeditious." (Tr. 413.) Elsewhere, the same witness admitted that in the final analysis, 60 percent may not be the correct figure for Dall porpoise. (Tr. 417.) Notwithstanding the doubts expressed concerning the 60 percent level, it remains the only credible evidence in the record. It is found that the maximum net productivity level for the North Pacific stock of Dall porpoise is 60 percent of its initial, preexploitation, population.

The current population (1980) of approximately 931,500 is .688 of the Dall porpoise preexploitation (1952) population of 1,354,000, and therefore 8.8 percent above the MNPL of 60 percent. As such, the North Pacific Ocean stock of Dall porpoise is not depleted.

VI. Quota and the Projected Impact of Allowed Takings

Having found that the best estimate of the stock is 8.8 percent above the maximum net productivity level of 60 percent, it is permissible to allow some taking of Dall porpoise. The Federation has requested a quota of 5,500 for each of the next three years. Close scrutiny must be paid to this request. The Federation concedes that "* * * more than 60 percent of the annual catches (of the mothership fleet) in 1978–80 were made within the United States FCZ". (FJS Ex. 2, p. 8.) Reference is made to Table 6 of that Exhibit, and calculations of the data provided there show that for the years 1978–80, an average of 68 percent of the mothership fleet's annual catches occurred within the U.S. FCZ.

The most recent data submitted by the Federation (FJS Ex. 4, p. 17) discloses that there were 8,729 boat-days of fishing effort by the mothership fleet for the entire 1979 season. Assuming that the boat-days of effort for 1981 will be substantially similar as that of 1979, then 68 percent of the 8,729 boat-days should occur within the United States FCZ. This projects to approximately 5,930 boat-days of effort in the United States FCZ. Using the methodology presented in FJS Exhibit 4, page 17, this amount of effort should be multiplied by 0.94, the kill rate per boat-day of effort, resulting in an estimated kill total of 5,575 Dall porpoise. This is slightly greater than the Federation's permit request of 5,500. Based upon the Federation's data, it is technologically feasible for it to operate a full-effort fishing season while not exceeding this requested quota of 5,500.

Section 1373(a) requires that the taking "not be to the disadvantage" of the species, and further, that such a taking "will be consistent with the purposes and policies set forth" in the section of Congressional findings and declaration of policy set forth in Section 1361. Further, Section 1373(d)(2) states that the Secretary of Commerce is required to publish, *inter alia*, a statement of the expected impact of the proposed regulations on the optimum sustainable population of such species or population stock. Accordingly, it is necessary to determine what degree of impact the 5,500 take-rate will have on the North Pacific Ocean stock of Dall porpoise.

Having found that the best estimate of the stock is 8.8 percent above its maximum net productivity level of 60 percent of the initial population, the calculated number of Dall porpoise that may be allowed to be taken, *without causing the current population to decline*, is approximately 21,763 (Appendix C). This represents a total take from the entire stock population, and both the land-based and mothership gill net fisheries will incidentally take from this stock.

If the fishing effort (boat-days) for the land-based fishery and the mothership fishery will be the same in 1981 as it was in 1979, as shown in the most recent data available in FJS Exhibit 4, page 17, that is, the mothership fishery accounting for approximately 54 percent of the total effort, then the mothership fishery should not exceed 54 percent of 21,763, *in order to keep the population from decreasing.* This results in a Japanese mothership salmon fishery total incidental take of 11,752. However, it is necessary to break this down further, for this 11,752 figure is calculated for the entire mothership fishery effort for the full season, in areas 1, 2, 3, 4, and 5 as shown in FJS Ex. 1, Figure 1. The permit request is only for fishing conducted within the U.S. FCZ, however, which is area 4. (Transcript, Oral Argument, page 15.)[12]

As noted previously, the anticipated fishing effort of the Japanese mothership salmon fishery within the United States FCZ is 68 percent of the total fishing effort for this fleet. When calculated, 68 percent of 11,752 allows a take of 7,991 Dall porpoise within the United States FCZ *in order to keep the population from decreasing.* This is some 45 percent larger than the requested quota. Thus, according to the findings based upon the best scientific evidence available in the record, the total allowable incidental kill, within the United States FCZ, of Dall porpoise which would maintain the population of the North Pacific Ocean stock at its current level, is greater than the requested quota. I find, therefore, that by allowing a total of 5,500 Dall porpoise to be taken, within the U.S. FCZ, the population is expected to increase. I further find and conclude that the expected impact of these regulations will not be to the disadvantage of this popuation stock of Dall porpoise, and that they are consistent with the purposes and policies set forth in the Act.

VII. Conditions

A. Continued Efforts to Reduce the Rate of Incidental Take of Dall Porpoise

A three-year U.S.-Japanese research program was established in 1978 to study the effects of the incidental take by the Japanese high seas salmon fisheries on marine

[9] This value is based upon a report that the taking of porpoise by salmon research vessels in the land-based fishing area is 60 percent of that recorded in the mothership area. (FJS Ex. 4, p. 9.) The evidence offered to support this value, however, is less than persuasive.

[10] In order to compute the back-calculation based upon k_t (kill rate) of 0.94 porpoise per set of gill net by both the land-based and mothership salmon fisheries, the table presented in FJS Exhibit 4, p. 17, was adjusted to reflect this finding. Further, because the Okhotsk Sea stock was found to be separate from the North Pacific stock, and unaffected by the Japanese mothership salmon fishery, the "boat-days" of effort in the Okhotsk Sea, years 1955–1958, were not included in the adjusted k_t rate. See Appendix B for a list of the adjusted k_t rate used for this decision.

[11] See Appendix A, part (a) for the formula used in these back calculations.

[12] Note that the maps presented in FJS Exhibit 2, Figure 2 and FJS Exhibit 1, Figure 1, number the fishing areas involved differently. Area 2 of FJS Exhibit 2, Figure 2 is the same as Area 4 of FJS Exhibit 1, Figure 1 and is the area inside the U.S. FCZ.

mammal populations, and methods to reduce or eliminate the incidental take. The program included estimating an annual take rate in the Japanese mothership fishery, and collecting of marine mammal sighting data aboard Japanese salmon research vessels and U.S. Platforms of Opportunity Program vessels to determine the distribution, movements and abundance of Dall porpoise. Also involved were a collection of biological samples and information from all Dall porpoise incidentally taken by the Japanese mothership salmon fishery, and studies of entanglement, gear and marine mammal behavior aboard a dedicated vessel chartered by the Japanese Fisheries Agency. The NMFS can be assured of the continued abundance and health of the North Pacific Ocean stock of Dall porpoise only if the Federation, in cooperation with the Japanese government and its fisheries agency, and the United States Government, continue this joint research effort.

The findings made in this decision rely upon numerous variables: R_{max}, r_{max}, M, k_t, density of porpoise, area inhabitated by the stock, and MNPL. However, the quality of this available scientific data, while adequate to make findings, is something less than ideal. In order to more accurately make future determinations and to ensure the maintenance of the North Pacific Ocean stock of Dall porpoise within the range of OSP, as required by the Act, a greater effort is needed to obtain more and precise data. With this objective in mind, and in accordance with Section 1374(b)(2)(D) of the Act, the following conditions should be attached to the granting of the permit to the Federation:

(1) *Research.* Further research is necessary in order to determine with reasonable certainty that there is only one stock of Dall porpoise affected by the Japanese mothership salmon fishery. At a very minimum, and among other steps to be taken, available skeletal materials must be examined and similar specimens must be collected from areas of the fishery where sample sizes are inadequate, such as the Bering Sea and the land-based salmon fishery area. In addition to skeletal analysis, tissue samples from incidentally taken Dall porpoise must be collected for electrophoretic analysis.

Additionally, there must be improved survey coverage over the entire range of the affected stock(s) of Dall porpoise in order to improve the estimates of the density of these porpoise, on an area-by-area basis. Improved estimates of density will result in improved estimates of present population levels.

More and exact information is needed on gross annual reproductive rates, natural mortality rates, the maximum net productivity level, and the rate of incidental kill for both the mothership and land-based salmon gill net fisheries. Also, research must continue on the question of whether the Dall porpoise are attracted to vessels. This introduces problems of biases which need to be answered in order to gather reliable data.

Further and *immediate* studies on the ecology of Dall porpoise are needed to provide information on behavioral factors that will improve the design of net gear that would reduce the rate of entanglement. The studies should be carried out within a fixed time frame, and experimental tests should be conducted immediately thereafter.

The record is devoid of solid evidence concerning whether it is technologically feasible to reduce the 5,500 annual quota, and a finding cannot be made in this regard. However, the Federation must give great emphasis to research into the modification of salmon fishing gear to reduce the incidental take of not only the Dall porpoise, but all marine mammals.

Only by research into gear modification and implementation will the NMFS be able to make progress towards the goal of reducing the rate of serious injury and mortality to insignificant levels approaching zero. It is a disturbing observation that the coefficient of incidental kill rate utilized in this proceeding was assumed constant throughout the 28-year history of this fishery. This is directly contra to the statutory goal. The Federation is strongly directed to employ modified gear which will reduce incidental kill rates in the mothership fishery, and encouraged to do likewise in its land-based fishery.

As a further condition to issuing the permit, the Federation must supply the NMFS with a report, within one month of the close of each mothership salmon fishery season, concerning: what gear modifications were tested either by operating catcher boats or by research vessels performing under actual fishing conditions, the percentage of the catcher boats which operated with modified gear, the effect such modified gear had on both the incidental taking of Dall porpoise and other marine mammals, the effect the modified gear had on the catch of the various target species of salmon, the cost of producing the modified equipment for that season, and a best estimate of the cost for making the modified gear which produced the most favorable results in quantity great enough to outfit the entire fleet.

(2) *Monitoring.* Better data on incidental take by both the mothership and land-based fleets are essential. As a minimum, there should be observers on 10 percent of the catcher boats of the mothership fleet. The Federation should consent to a similar arrangement for its vessels in the land-based fleet, operating outside the FCZ. However, presently only $60,000 is budgeted through June 1981, by the NMFS for the observer program and activities related to Dall porpoise. This sum is woefully inadequate for any monitoring scheme and guarantees the impossibility of a NMFS mechanism for advising the permittee when the 5,500 level has been reached, or to determine the level of take outside the FCZ in order to assess the cumulative impact of taking upon the affected population. Considering the paucity of present funds, and the apparent absence of funds for 1982 or 1983, the financial burden at this time of providing for monitoring must fall to the Federation. The granting of a permit to the Federation is conditioned upon its funding the aforementioned 10 percent observer program. As an additional condition to the permit, Federation is charged with notifying the NMFS concerning the total kill of Dall porpoise at the end of the annual fishing season.

(3) *Seabirds.* The record shows that there are a large number of seabirds taken each year as a result of the salmon gill net fishery. Possibly sixteen species[13] are incidentally taken, with a yearly take estimated to be between 200,000 and 700,000 birds. Since 1952, an estimated 4.7 million seabirds have been killed in Japanese gill nets. In that the primarily affected species of birds have low reproductive rates, this high estimated mortality rate could have serious impact on the populations of some sea-birds. Such a situation could have a significant effect on their ecosystem as a whole, including both the salmon species and Dall porpoise, of which these seabirds are an integral part.

In prescribing regulations, the Act directs that full consideration shall be given to all factors which may affect the extent to which these marine mammals may be taken. One factor to be considered is existing international treaty and agreement obligations of the United States. (Section 1373(b)(2)). The Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and their Environment[14] (Convention) is just such an international obligation. This Convention, in force between Japan and the United States, prohibits the taking of any migratory birds which are listed in its Annex. Thirteen of the species listed in footnote 13 are on the Annex.

Although full consideration is to be given to this treaty, this consideration is to be given with a view toward setting a take quota for marine mammals-in this instance, Dall porpoise. Consideration has been given. However, while the Secretary of Commerce must consider relevant international agreements, he is without jurisdiction under the Act to promulgate regulations concerning seabirds. This jurisdiction lies within the Department of Interior. (16 U.S.C. 704.)

Notwithstanding, it is strongly recommended that monitorings and research be carried out to ascertain more precisely the magnitude and significance of the incidental seabird mortality associated with the gill net fishery. This research should include a systematic sampling effort to determine the magnitude and species composition of the seabird mortality. Further, cooperation between the Governments of Japan and the United States should be encouraged to implement a banding program to determine which populations or breeding colonies are being affected, and to what degree. This suggested research and monitoring, however, cannot be made a condition of the permit being granted.

(4) *Attainment of Quota.* In order to enforce the allowed limit of incidental take of Dall porpoise, there must be a central reporting office, upon one of the motherships, manned by a U.S. observer, to which each of the observers must report their observations of incidental take rate. The skippers of catcher boats without observers must also report the number of Dall porpoise incidentally taken

[13] These are the Laysan Albatross, Northern Fulmar, Fleshfooted Shearwater, Sooty Shearwater, Short-tailed Shearwater, Fork-tailed Storm-petrel, Common Murre, Thick-billed Murre, Ancient Murrelet, Parakeet Auklet, Cassin's Auklet, Least Auklet, Crested Auklet, Rhinoceros Auklet, Horned Puffin and Tufted Puffin.

[14] 25 U.S.T. 3329; T.I.A.S. 7990 (1972).

by that boat's gill net. Thus, each catcher boat should report to a central office aboard a mothership its total incidental take. Reports should be made daily to this central office. If circumstances make daily reporting impossible, reports should be made as frequently as possible.

Upon the attainment of 5,500 incidentally taken Dall porpoise within the U.S. FCZ, the Japanese mothership salmon gill net fishery is to immediately cease its operations within the U.S. FCZ.

VIII. Duration of Permit

The Federation has requested a three year term in which to operate under the permit. Various reasons are presented by two of the parties concerning why the duration of the permit should be limited to a shorter time period. The thrust of these reasons is that the Federation has not made an effort to test specific gear modification to reduce the rate of incidental kill of Dall porpoise, that the data base upon which the determinations of present, initial and optimum sustainable populations and the permitted quota are based is weak, and that the commitment of the Federation to improve the data base and the fishing gear with a view to reducing the incidental kill and serious injury rate to insignificant levels approaching zero is irresolute.

I am not persuaded to so limit the duration of the permit. Concededly, the data base is weak. However, it will not be sufficiently improved with a single year's additional data. If the permit process were to be repeated in one year, many of the same weaknesses would continue to exist because much reliance would still be placed upon old and incomplete data, while at the same time the same issues would be repetitively, and redundantly, litigated. Little would be gained. Further, the conditions attached to this permit which call for continued and increased research into the population dynamics and ecology of Dall porpoise will assure an improved data base. The same holds true for the conditions which call for continued and increased monitoring of the kill and serious injury rate of Dall porpoise incidental to this fishery, and for those which call for continued and increased research into fishing gear modifications with a view to the reduction of the mortality and serious injury rate to insignificant levels approaching zero.

Granting the permit, with the aforementioned conditions, for three years will give both the Governments of Japan, and the United States, and the Federation more time to devote to research, while providing long-term stability coupled with intelligent planning. Finally, if for any reason it is found that modifications to the regulations must be made in midcourse, a statutory basis in Section 1373(e) exists for such revision. It is found and concluded that the three year permit applied for will best serve improving the data base while allowing sufficient time for research aimed at improving the fishing gear in order to reduce the incidental kill and serious injury rate to insignificant levels approaching zero.

IX. Recommended Decision

Based upon the substantial evidence in the record as a whole, it is the Recommended Decision in this matter that the proposed amendment to the regulations of the National Marine Fisheries Service permitting the taking of Dall porpoise incidental to the commercial salmon fishing operations for the gill net salmon fishing season within the U.S. fishery conservation zone beginning 1981, and continuing through the same fishing season for 1983, be adopted as the final regulations, as amended by any findings of fact, conclusions of law, recommendations, and conditions herein.

Decided at Washington, D.C., this 24th day of April 1981.

Frank W. Vanderheyden,
Administrative Law Judge.

Appendix A

Part (a)

The equation (NOAA Ex. 14) accepted to compute backward in time to determine the initial, pre-exploitation, population is:

$$N_t = \frac{N_{t+1} + k_t + \frac{(r_t - M)(k_t)}{2}}{1 + (r_t - M)} \quad (1)$$

Where:

$$r_t = r_{max} - (r_{max} - M)\left[\frac{N_t}{N_{max}}\right]^{2.39} \quad (2)$$

And:
k_t = insidental kill rate
M = natural mortality
t = year being calculated
N_{max} = Maximum population the ecosystem can support.[1]

Part (b)

In order to calculate forward in time, equation (1) above is solved for N_{t+1}:

$$N_{t+1} = N_t + N_t(r_t - M) - k_t - \frac{(r_t - M)(k_t)}{2}$$

where r_t is the same as equation (2) above.

Appendix B

Year	Effort (boat-days)[1] Mothership	Land-based	Estimated take (k_t)[2] Excluding Okhotsk
1952	4,308	2,668	6,557
1953	9,329	8,786	17,028
1954	18,127	9,476	25,947
1955	31,981	14,950	44,115
1956	39,637	10,166	46,815
1957	25,707	10,628	34,153
1958	35,476	11,086	43,768
1959	25,408	14,880	37,871
1960	23,123	15,840	36,625
1961	17,610	16,620	32,176
1962	21,297	14,520	33,668
1963	21,578	16,980	36,245
1964	25,340	17,580	40,345
1965	22,654	19,762	39,871
1966	18,185	16,818	32,903
1967	17,878	15,816	31,484
1968	20,205	16,394	34,403
1969	20,631	16,503	34,906
1970	19,420	12,988	30,464
1971	19,526	12,525	30,128
1972	19,682	13,517	31,207
1973	19,921	15,087	32,908
1974	18,253	15,784	31,995
1975	18,732	15,709	32,375
1976	21,246	15,590	34,626
1977	12,946	9,751	21,335
1978	8,385	8,841	16,192
1979	8,729	7,545	15,298

[1] In order for this back-calculation to be accurate, it is important that the calculated 1952 population (N_t where t=1952) be equal to the estimated maximum population which the ecosystem can support (N_{max}). Thus, in the equation for r_t when t=1952, (N_t/N_{max}) must equal 1.0, which results in $(N_t/N_{max})^{2.39}$ also equalling 1.0.

Appendix B—Continued

[1] Mothership and Land-Based effort as shown in F/S Exhibit 4, page 17, Table 3.
[2] Estimated take equals (Mothership effort × 0.94) plus (Land-Based effort × 0.94).

Appendix C

In order to determine the number of porpoise which can be taken without causing a reduction in their population level, N_{t+1} is considered equal to N_t. Equation (1), Appendix A, Part (a), is then solved for k_t:

If:

$$N_t = \frac{N_t + k_t + \frac{(r_t - M)(k_t)}{2}}{1 + r_t - M}$$

then, solving for k_t:

$$k_t = \frac{N_{t+1}(r_t - M)}{1 + \frac{(r_t - M)}{2}}$$

where r_t is computed according to Equation (2) of Appendix A, Part (a).
Because:
$N_{t+1} = N_t = 931{,}410$
M = 0.13
$r_t = 0.1536417$

$$k_t = \frac{931{,}410\,(0.1536417 - 0.13)}{1 + \frac{(0.1536417 - 0.13)}{2}}$$

$k_t = 21763.$

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